TRANSLATION

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(81) Etats désignés: AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GE, HU, ID, IL, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, brevet ARIPO (GH, GM, KE, LS, MW, SD, SZ, UG, ZW), brevet eurasien (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), brevet européen (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), brevet OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).

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Avant l'expiration du délai prévu pour la modification des revendications, sera republiée si des modifications sont reçues.

(54) Title: SLOT MACHINE WITH IN-BUILT SECURITY SYSTEM

(54) Titre: MACHINE A SOUS SECURISEE

(57) Abstract

The invention concerns a slot machine with in-built security system comprising a coin meter-chip comparator and/or a smart card coin meter comprising a smart card reader-validator (600), and a central processing unit managing the games (200) played with chips and/or smart card, capable of preventing any misuse by the players. For this purpose, the machine comprises means for separating credits (200, 110, 120, 600, 602) derived from gambling with card or chips so as to obtain these credits in the form of chips for a bet or game played with chips, or to record these credits on a smart card present in the reader before it is ejected or before a new card is inserted for bets or games played with said card. The invention is applicable to slot machines.

(57) Abrégé

L'invention concerne une machine à sous sécurisée comportant un monnayeur-comparateur à jetons et/ou un monnayeur à carte à puce comportant un lecteur-validateur de carte (600) à puce, et une unité centrale de gestion des parties (200) jouées par jeton et/ou carte à puce, apte à empêcher toute mauvaise utilisation par les joueurs. Pour cela la machine comporte des moyens de séparation des crédits (200, 110, 120, 600, 602) issus de jeux par carte ou par jetons de manière à obtenir ces crédits sous forme de jetons pour une mise ou une partie engagée par jeton, ou ces crédits sur une carte à puce présente dans le lecteur avant son éjection ou avant l'insertion d'une nouvelle carte pour les mises ou les parties engagées par cette carte. Application aux machines à sous.

UNIQUEMENT A TITRE D'INFORMATION

Codes utilisés pour identifier les Etats parties au PCT, sur les pages de couverture des brochures publiant des demandes internationales en vertu du PCT.

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Slot machine with in-built security

The invention relates to a slot machine with in-built security system so as to avoiding all misuse by the players of the aforementioned machine.

It applies to slot machines comprising a coin acceptor [coin comparator] and electronic "acceptor" accepting payment by smart card or with the slot machines having only an electronic acceptor.

One is reminded that a slot machine equipped with a card reader as well accepts the play by smart card as the play by coins without distinction.

Indeed to put credit on a slot machine from a smart card, the card reader strictly recreates the electronic signals generated when a coin is inserted into the gaming machine.

In the same way to put credit on a smart card from a slot machine, the card reader recreates the electronic signals generated when a coin is dispensed out of the gaming machine.

A first problem to be solved related to a case of misuse, consists in preventing bets by smart card to distort the accounting meter.

A second raised problem involved in a case of misuse consists in preventing that a player who plays on a mixed coiner machine (tokens and smart card) with tokens can recover wins obtained or credits of which it lays out in electronic form on his smart card.

A third raised problem involved in a case of misuse consists in preventing that a player who plays on an electronic coiner machine with a card can transfer the credit related to his card, on the slot machine with under, insert a second card in the reader of the slot machine and ask for the transfer of the credit back to the second card.

A fourth raised problem involved in a case of misuse consists in preventing that a player who plays on an electronic coiner machine with a card can transfer credit of his card to the slot machine, and then cash those credits out in the form of coins.

The solution suggested by the invention to solve these problems is to perform, for each player, a separation between the bets/wins carried out by coins and the bets/wins carried out by smart cards and a separation between the bets/wins carried out with a smart card of the bets/wins carried out with another smart card.

The present invention thus has more particularly as an aim a slot machine with in-built security system comprising a coin meter-chip comparator and/or a smart card coin meter comprising a smart card reader-validator, and a central processing unit managing the

games played with chips and/or smart card, capable of preventing any misuse by the players. For this purpose, the machine comprises means for separating credits derived from gambling with card or chips so as to obtain these credits in the form of chips for a bet or game played with chips, or to record these credits on a smart card present in the reader before it is ejected or before a new card is inserted for bets or games played with said card.

To avoid distorting the accounting meters, the means for separating credits comprise means of orientation, by the card reader, of the bets carried out by smart card towards the hopper of the machine.

For this purpose, the means of orientation of the bets carried out by smart cards towards the hopper comprise a device of connection making it possible to connect the "Reset" output of the central processing unit (CPU) of the machine, the "CPU level of token" output of the machine, the input driving the diverter orientation of the machine as well as the "level of token hopper" output of the machine to the card reader.

According to another characteristic, the means of separation of the credits comprise means of detection by the card reader, of infomations on the games engaged, the bets and the credit available for a player as of the insertion of a smart card in the aforementioned reader until the ejection of the aforementioned smart card.

The slot machines comprise at least a meter of the bets and a meter of the games connected to their central processing unit of management. It is envisaged according to the invention to detect if the machine is in a situation of a partial bet. For this purpose the means of detection comprise a device of connection to the outputs of these meters ready to switch the output signals of these meters towards the card reader when a smart card is inserted and when a request of ejection of the card already inserted in the reader.

The central processing unit of management of the machines is ready to disable -thru an output signal- the coiner-acceptor. According to the invention the means of detection comprise also a device connecting the reader to the aforementioned output in order to drive the inhibition signal of the coin-acceptor towards the card reader once a new card is inserted or at the time of a eject request of the smart card.

The slot machine with in-built security system comprise a credit meter and a pilot device of a minimal bet in this meter ready to provide an indicative signal of this state. The means of detection comprise a device connected to that the credit-pilot device to direct the signal delivered by this device towards the card reader once a new card is inserted or at the time of a request of ejection of the card.

The means of separation of the credits that have just been detailed rely on parallel connections of certain inputs and/or outputs of the electronics of the slot machine to the card reader.

According to another mode of realization it is envisaged to carry out the credit separation by replacing the devices of parallel connection by a serial connection, information relating to the various inputs and/or outputs being exchanged according to a serial protocol of communication, this exchange being controlled by a program loaded in the program memory of the slot machine.

The invention will be understood better with the reading of the description which is made hereafter and which is given as a nonrestrictive example according to the following drawings:

- Figure 1 represents a general outline of a slot machine equipped with a coin acceptor and a electronic card reader provided with a device according to the invention

- Figure 2 represents the diagram of a slot machine with the elements of the device allowing the orientation by the card reader of the bets carried out by smart card towards the hopper

- Figure 3 represents the diagram of a slot machine with the elements of the device allowing the detection of the game in progress.

The card reader 600 also called reader-validator whose simplified diagram is represented on figure 1 has a structure equivalent to that of well-known card readers.

It includes inside a case 600 primarily a microcontrolor 601which manages the whole of the operations relating to the application which is charged in the form of a program in a nonvolatile program memory (for example in EPROM memory). For that this microcontroler is connected by a bus to a program memory 602 of type EPROM for example, with a second memory 603 of type EEPROM, the latter allowing for example to memorize a certain number of parameters which evolve little such as a black list of cards that are in opposition and with a third memory 604 of type RAM being used as read-write memory for the execution of the program of the microcontroler.

The microcontrolor can be possibly connected to a RTC circuit (Real Time Clock) and to a security module that encloses a DES or RSA diversification algorithm allowing to ensure secured exchanges between the reader and the outside world.

The bus is also connected to a display 605 which displays in particular the played sums and the wins obtained. The reader validator has an entry 606 intended to receive the

gambler card and possibly operator cards necessary to update for example the parameters of the payment system (in particular the value of the settings associated with the minimum and maximum bet buttons).

The bus is also connected to a certain number of buttons; i.e. command buttons here 607 and 608 that allow the players to choose either minimal bet or maximum bet. Another button (not represented) makes it possible to start the game. One finally finds in the coiner a logical interface 604 intended to ensure the exchanges between the reader and the slot machine electronics 700.

Interface 604 makes it possible to decode the instructions appearing on the bus B and intended for electronics 700 of the slot machine and conversely to decode the signals resulting from this electronics to be analyzed by the reader. The physical interface intended to ensure connections in accordance with the invention between electronics of the machine and the reader is made of connectors 110 and 120 comprising a whole of pins connected to the inputs and/or outputs of the elements specified below.

One recalls before going more in detail of the invention that a slot machine has 5 meters in France (6 meters in other countries such as in the USA.):

- A cumulative bet meter C1: adds up the number of the bets by coins.
- A cumulative out meter C2: adds up the number of coins paid by the machine
- A cumulative in meter C3: adds up the number of coins won by the casino
- A played game meter C4: adds up the number of the played games.
- A cumulative jackpot meter C5: adds up the wins obtained by jackpot
- A jackpot meter by cumulating coins credits (only in certains countries such as the US..)

In the case where one equips the machine with one card reader 600, these six meters do not make it possible to distinguish if the bets or the wins were carried out by card or coins.

This is why in order to provide to the casino with a complete management of its machines, nine meters are integrated in the card reader.

Seven of them are logical meters stored in backed up memory EEPROM and two of them are electromechanical meters.

a) The logical meters are as follows:

- A total meter related to the coin and card bets
- A total meter related to the coin and card out

- A meter of the coins receipts

- A total meter of the jackpot wins

- A meter of jackpot by cummulativ cards and coins credits (only in certain countries: such as in the USA)

- A meter of the bets by card: this meter adds up the bets engaged by smart card

- A meter of out to the card: this meter adds up the returns of the profits in the smart card.

The contents of these seven meters are collected from the memory of the card reader with a collecting card authorized to carry out such a transfer or by means of a network (if the machines are networked).

The contents of these meters are then stored in the database of the accounting software then processed to provide information necessary to the management of the coins and the cards credits played and won.

b) The electromechanical meters are as follows:

- a meter of the bet by card

- a meter of the out to card

Those two meters are envisaged to be doubled in order to control by direct reading the integrity and the management of the logical meters bearing the same names.

The five (or six) other electromechanical meters "images" of the logical meters, are those established of origin on the machine.

The whole set of meters of the machine are referred 100 on figure 1.

The machine is according to the invention equipped with circuits allowing a separation of the credits resulting from plays by card or coins so as to obtain the aforementioned credits in the form of coins for a bet or a game engaged by coins. And so as to obtain the aforementioned credits on the smart card that is inserted in the reader before his ejection or before the insertion of a new card for the games engaged by the aforementioned card

For this purpose, electronics 700 and the reader comprise respectively a physical interface of connection 110, 120, 130 and logic 604 making it possible to scan signals generated by the electronics of the machine by connecting outputs and/or inputs of signals of the electronics of the machine to reader-validator 600.

Connector 100 makes it possible to connect the outputs of meters 100 to the control unit and management CPU 200 of the machine and to the control unit 601 of the reader via the logical interface 604.

Connector 120 makes it possible to connect outputs of the control unit 200 of the machine to the control unit 601 of the reader via interface 604. And to connect the coins acceptor and the hopper to the control unit 601 of the reader via interface 604.

One will describe now how one carries out an orientation of the bets by cards towards the hopper of the machine. For this purpose, refer to the diagram of figure 2.

Indeed, in a machine each time that a coin or that a credit smart card is bet, this credit is directed either towards the hopper or towards the case of the receipts.

The choice of the orientation is made according to the level of coins in the hopper. This level is known by the state of the signal of level of coins in the Hopper that comes out of the hopper, which activates the mechanism of directing the coins towards the hopper or the case of the receipts:

- If the hopper is nonfull, the bet is directed towards the hopper
- If the hopper is full, the bet is directed towards the case of the receipts.

A first problem solved by the invention consists in allowing that all the bets by smart card are directed towards the hopper of the machine so that there is no distortion of the meter of the case of the receipts.

For this purpose it is envisaged to scan or divert signals of the machine towards the card reader 600 to turn them over towards CPU board 200 of the machine by means of the physical interface of connection and a deviative whole including an electromagnet 130 and mechanics of shunting 501 of the coins, towards the hopper or the case of the receipts, associated to the logical interface 604 placed in the reader to receive the decoding of the signals.

The output rebootstrapping "Reset" and "Level of coins CPU" of unit 200 are connected to reader 600. The input "Diverter of Orientation" of unit 200 and the output "Diverter of Orientation " of the deviative unit are connected to reader 600.

To each insertion of a smart card before emitting bets towards the machine, the card reader comes to scan if deviative signal the "orientation" indicates an orientation of the bets towards the hopper opens the case of the receipts:

- If the diverter is directed towards the hopper, the reader can emit bets towards the machine because this one all will be directed towards the hopper.
- If the diverter is directed towards the case of the receipts:

  - The reader forces the signal "level of coins CPU" at the logical level corresponding to a nonfull hopper

  - The reader activates then the general RESET of the machine so that this one takes into account the change of full hopper to nonfull hopper

  - The reader can then emit credits smart card towards the machine because those all will be directed towards the hopper.

One now will describe how one carries out the detection of the game in progress:

The output of the bets meter C1 is connected to unit 20 but also to the reader. The output of game meter C4 is connected to unit 200 but also to the reader. With these two connections the reader can know the state of activity of the machine.

The game in progress on a machine is defined in the following way:

- It is a game in progress by card or coins credits and it is not completed.

- It is a partial bet (lower than the bet max that can be accepted by the machine) engaged by cards or coins credits without the game being in process.

- They being also cards or coins credits stored in the credit meter of the machine without either a partial bet being committed or a game being in progress.

The detection of the game in progress is the solution suggested in order not to mix the cards or coins credits.

Because, after the insertion of a smart card in the reader, if a game by coins is in process, it is then possible to recover in the card the potential wins of the game in progress or the engaged partial bets or the credits contained in the credit meter of the machine.

In the same way after the ejection of a smart card of the reader if a game by card is in process, it is then possible to recover in coins the potential wins of the game in progress or the engaged partial bets or the credits contained in the credit meter of the machine.

One will describe operation in the various situations listed below:

1) Insertion of the smart card in the reader

a) Case of a game engaged by coins and not finished:

The reader scans the activity of the signal "inhibition" of the coins acceptor 500 coming from unit CPU 200 of the machine.

If this one is active: it is that a game is in process, the reader displays "game in progress" and ejects the smart card

If this one is inactive: it is that no game is in process, the reader accepts the insertion of card and displays the current purse contained in this one.

b) Case of a partial setting:

The reader scans the C1 and C4 meters metering the bets and the games of the machine. If the bets meter C1 settings were incremented and not the game meter C4: it is that a partial bet was carried out, the reader displays "game in progress" and ejects the card..

If the bets meter C1 were not incremented or if it was as well as the game meter C4: it is that no partial bet was carried out, the reader accepts the insertion of the card and displays the current purse contained in this one.

c) Case of the credit meter of the machine:

The reader scans the activity of the signal controlling the lighting of the lamp of the "BET MIN" button resulting from CPU board of the machine.

If the signal is active (enlightened lamp): they is that credits are present in the credit meter of the machine, the reader displays "game in progress" and ejected the card.

If the signal is inactive (extincted lamp): it is that the credit meter of the machine is empty, the reader accepts a card insertion and displays the current purse contained in this one.

2) Ejection of the smart card of the reader

a) Case of a game engaged by card and not finished:

The reader scans the activity of the signal "inhibition" of the coin acceptor resulting from CPU board of the machine.

If this one is active: it is that a game is in process, the reader displays "game in progress" and refuses the ejection of the smart card.

If this one is inactive: it is that no game is in process, the reader accepts the ejection of the card.

b) Case of a partial bet:

The reader scans the bet meters and the game meter of the machine.

If the bet meter were incremented and not the game meter: it is that a partial bet was carried out, the reader accepts the ejection of the card.

c) Case of the credit meter of the machine::

The reader scans the activity of the signal controlling the lighting of the lamp of the button "BET MIN" resulting from CPU board of the machine.

If this signal is active (enlightened lamp): this is that credits are present in the credit meter of the machine, the reader displays "game in progress" and refuses to eject the card. If this signal is inactive (extincted lamp): it is that the credit meter of the machine is empty, the reader accepts the ejection of the card.

The description that has been just made corresponds to a mode of realization for which the means of separation of the credit are built on connections of a parallel type. It is clearly understood that these connections could be replaced by a serial connection. In this case, information relating to the various inputs and/or outputs of the machine is exchanged according to a serial communication protocol controlled by a program loaded for this purpose in program memory (PROG) of the electronics CPU 200 of this machine.

CLAIMS

1. A slot machine with built-in security system comprising a coin meter-chip comparator and/or a smart card coin meter comprising a smart card reader-validator (600), and a central processing unit managing the games (200) played with chips and/or smart card, capable of preventing any misuse by the players. For this purpose, the machine comprises means for separating credits (200, 110, 120, 600, 602) derived from gambling with card or chips so as to obtain these credits in the form of chips for a bet or game played with chips, or to record these credits on a smart card present in the reader before it is ejected or before a new card is inserted for bets or games played with said card.

2. Machine with built-in security system according to claim 1, characterized in that the means of credits separation comprise of the means of orientation (602, 120) by the card reader of the bets carried out by smart card towards the hopper of the machine, so as not to modify the state of the meters of receipt.

3. Machine with built-in security system according to the claim 1 or 2, characterized in that the means of orientation of the bets carried out by smart cards towards the hopper comprise a device of connection (120) making it possible to connect the RESET output of the central processing unit (CPU) of the machine, the "level of coins" CPU output of the machine, the input driving the diverter orientation of the machine as well as the "level of hopper coins" output of the machine to the card reader.

4. Machine with built-in security system according to any of the preceding claims, characterized in that the means of credits separation comprise of the means of detection (602, 110) by the card reader of information on the games engaged, the bets and the credit available for a player as of the insertion of a smart card in the aforementioned reader until the ejection of the aforementioned smart card.

5. Machine with built-in security system according to claim 4, comprising a bets meter, a game meter connected to the central processing unit of management of the machine (200), characterized in that the means of detection comprise a device of connection (110) to the outputs of these meters ready to switch the output signals of these meters towards the

card reader on the insertion of a smart card in the reader or a request of ejection of the card already inserted in the reader.

6. Machine with built-in security system according to any of the preceding claims, the central processing unit of management being ready to deliver an output signal disabling the coin acceptor, characterized in that the means of detection comprise a device of connection of the reader to the aforementioned output to direct the signal disabling the coin acceptor towards the card reader on the insertion of a new card or at the time of a request of ejection of the smart card.

7. Machine with built-in security according to any of the preceding claims, including a credit meter and a pilot device scaning minimal bet in this credit meter ready to provide an indicative signal of this state, characterized in that the means of detection comprise a device of connection to the pilot device of credit to direct the signal delivered by this device towards the card reader on the insertion of a new card or at the time of a request of ejection of the card.

8. Machine with built-in security according to claims 1, 3 and 5, characterized in that the devices of parallel connection are replaced by a serial connection and a communication protocol allowing the exchanges between the central processing unit of management (200) of the machine and the reader-validator (600), controlled by a program loaded for this purpose in the program memory (PROG) of the central processing unit (200).

INTERNATIONAL SEARCH REPORT

International Application No
PCT/FR 98/01672

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 G07F17/32

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 G07F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	EP 0 360 613 A (BALLY) 28 March 1990 see column 7, line 41 – line 52 see column 9, line 10 – line 22	1,4 2
A	WO 96 07164 A (GEMPLUS) 7 March 1996 see page 4, line 15 – line 19	

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
1 December 1998	09/12/1998
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70_ 340-2040, Tx 31 651 epo nl, Fax: (+31-70) 340-3016	Authorized officer Neville, D

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INTERNATIONAL SEARCH REPORT

International Application No
PCT/FR 98/01672

Information on patent family members

Patent document cited in search		Publication date	Patent family member(s)	Publication date
EP 360613	A	28-03-1990	US 5179517 A	12-01-1993
			AT 116754 T	15-01-1995
			AU 916484 B	01-08-1991
			AU 3450489 A	29-03-1990
			DE 68920391 D	16-02-1995
			DE 68920391 T	27-07-1995
WO 9607164	A	07-03-1996	FR 2724036 A	01-03-1996
			AU 695400 B	13-08-1998
			AU 3348995 A	22-03-1996
			BR 9508643 A	25-11-1997
			EP 0778974 A	18-06-1997
			JP 10500796 T	20-01-1998
			ZA 9507335 A	28-03-1996

Form PCT/ISA/210 (patent family annex) (July 1992)

RAPPORT DE RECHERCHE NTERNATIONALE

de Internationale No PCT/FR 98/01672

A. CLASSEMENT DE L'OBET DE LA DEMANDE

CIB 6 G07F17/32

Selon la classification internationale des brevets (CIB) ou à la fois selon la classification nationale et la CIB

B. DOMAINES SUR LESQUELS LA RECHERCHE A PORTE

Documentation minimale consultée (systeme de classification suivi des symboles de classement)

CIB 6 G07F

Documentation consultée autre que la documentation minimale dans la mesure ou ces documents relèvent des domaines sur lesquels a porté la recherche

Base de données électronique consultée au cours de la recherche internationale (nom de la base de données, et si réalisable, termes de recherche utilisés)

C. DOCUMENTS CONSIDERES COMME PERTINENTS

Categorie	Identification des documents cités, avec, le cas échéant, l'indication des passages pertinents	no. des revendications visées
X A	EP 0 360 613 A (BALLY) 28 mars 1990 voir colonne 7, ligne 41 – ligne 52 voir colonne 9, ligne 10 – ligne 22 ---	1,4 2
A	WO 96 07164 A (GEMPLUS) 7 mars 1996 voir page 4, ligne 15 – ligne 19 ----	

☐ Voir la suite du cadre C pour la fin de la liste des documents

☒ Les documents de familles de brevets sont indiqués en annexe

Catégories speciales de documents cités:

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"E" document antérieur, mais publié à la date de dépôt ou après cette date
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"&" document qui fait partie de la même famille de brevets

Date à laquelle la recherche internationale a été effectivement achevée	Date d'expédition du présent rapport de recherche internationale
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Information on patent family members

Document brevet cité aurapport de recherche		Date de publication	Membre(s) de la famille de brevet(s)		Date de publication
EP 360613	A	28-03-1990	US	5179517 A	12-01-1993
			AT	116754 T	15-01-1995
			AU	916484 B	01-08-1991
			AU	3450489 A	29-03-1990
			DE	68920391 D	16-02-1995
			DE	68920391 T	27-07-1995
WO 9607164	A	07-03-1996	FR	2724036 A	01-03-1996
			AU	695400 B	13-08-1998
			AU	3348995 A	22-03-1996
			BR	9508643 A	25-11-1997
			EP	0778974 A	18-06-1997
			JP	10500796 T	20-01-1998
			ZA	9507335 A	28-03-1996